Anritsu Advancing beyond

Network Master™ Series

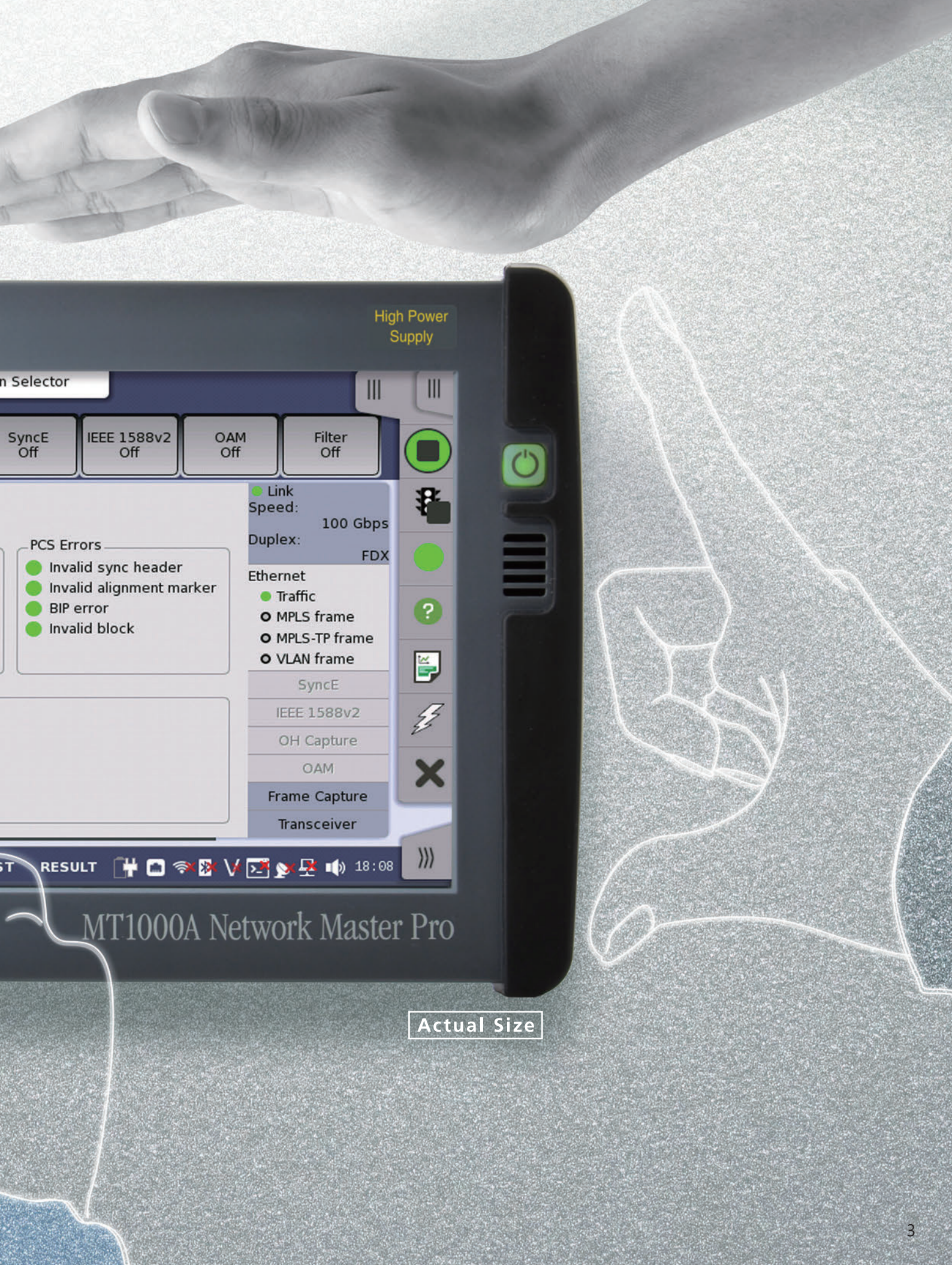
Network Master Pro MT1000A

10G Multirate Module MU100010A
100G Multirate Module MU100011A
OTDR Module MU100020A/MU100021A/MU100022A/MU100023A
High Performance GNSS Disciplined Oscillator MU100090B

Network Master Pro

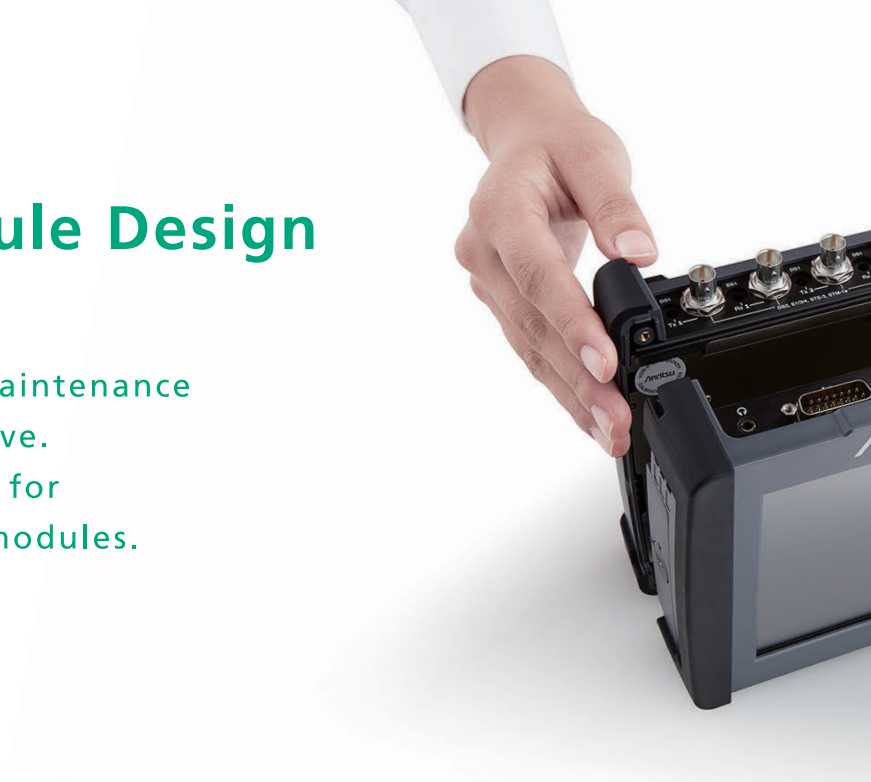
Excellent Eco Product

Smart All-in-One Optical and Data Measurements


High Power Supply
n Selector
SyncE Off
IEEE 1588v2 Off
OAM Off
Filter Off
Link
Speed:
100 Gbps
Duplex:
FDX
PCS Errors
Invalid sync header
Invalid alignment marker
BIP error
Invalid block
Ethernet
Traffic
MPLS frame
MPLS-TP frame
VLAN frame
SyncE
IEEE 1588v2
OH Capture
OAM
Frame Capture
Transceiver
RESULT
18:08
MT1000A Network Master Pro

Actual Size

Leading-edge Module Design



Wired network installation and maintenance must also evolve as networks evolve. The MT1000A is customized easily for every measurement by changing modules.

Network Master Pro (Main Frame) MT1000A

Easy to use | All in One | I&M

- All-in-one handheld MT1000A main unit test system
  – Customized configuration supporting required functions
- Intuitive operation using touch screen
  – Unified GUI for all tests
- Compact and lightweight (3.5 kg) with battery operation
  – Up to 3 hours of continuous on-site operation

Standalone Automatic Testing

Fewer operation errors and easy Pass/Fail evaluations

details p.10

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Transport Module

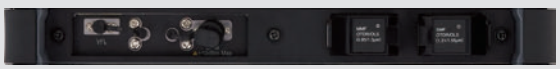
100G Multirate Module MU100011A

10G Multirate Module MU100010A

+

OTDR Module

MU100020A/MU100021A/MU100022A/MU100023A



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Sync Module

High Performance GNSS Disciplined Oscillator MU100090B

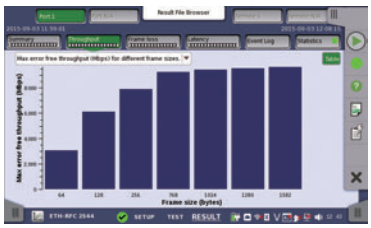
		FTTA/Mobile Fronthaul	Mobile Backhaul	Metro/Core Network	
Supports communication networks up to 100G OTN Ethernet / TCP Throughput / 100G	• Supported for 100G/25G Ethernet • Supported for 100G/40G OTN • Condensing the communication network opening maintenance technologies into one module - Ethernet, eCPIR/RoE/CPRI/OBSAI, OTN, Fibre Channel, SDH/SONET, PDH/DSn • Multiple measuring instruments can be operated and measured	✓	✓	✓	details p.6
Intuitive Fiber Status Monitoring OTDR / FTTA / Const-ruction	• Select of four modules - 3 wavelength SM (1310/1550 nm, 1650 nm) - 3 wavelength SM (1310/1550/1625 nm) - 2 wavelength SM (1310/1550 nm) - SM/MM combo (1310/1550 nm, 850/1300 nm) • Multi-pulse measurement • Fiber Visualizer - Graphical summary and Pass/Fail evaluation display	✓	✓	✓	details p.7
Time Synchronization Measurement with GPS clock SyncE / PTP Network	• Time Error Measurement - Measures phase difference from 1PPS/PTP Packet Timing based on GNSS signal • SyncE Wander Measurement • Ethernet One-Way Latency Measurement - Synchronizes two MT1000A units		✓		details p.6

100G Multirate Module MU100011A: 10G Multirate Module MU100010A: Flexible Support for Communications Networks up to 100G

The MU100010A and MU100011A provide strong functions and performance at speeds from 1.5 Mbps to 10 Gbps, and from 10 Mbps to 100 Gbps, respectively, for installing and maintaining communications networks.

- All-in-one Portable System
  - Supports Ethernet, OTN, Fibre Channel, eCPRI/RoE/CPRI/OBSAI, SDH/SONET, PDH/DSn
- Mobile Fronthaul Commissioning and Inspection
  - BER tests using CPRI/OBSAI interface, Error/Alarm tests, Return Delay Time tests, Link Status checks
  - BER and Latency tests using eCPRI/RoE (IEEE1914.3) frame
  - CPRI over OTN connection checks
- Mobile Backhaul Commissioning and Inspection
  - Synchronous Ethernet (SyncE), PTP (IEEE 1588 v2) tests and analyses
- Commissioning and Troubleshooting Carrier Access Networks
  - Ethernet tests up to 100 Gbps, including RFC 2544 and Y.1564
  - RFC6349 TCP throughput test up to 10 Gbps
  - Frame Capture Function for fast troubleshooting
- Metro and Core Network Commissioning and Maintenance
  - Supports OTN up to OTU4 and multistage mapping for fast easy testing of SDH/SONET and PDH/DSn networks
- Full Multi-user Remote Operation using free MX100001A Software
  - Independent ports for simultaneous multi-user access to one MT1000A

Measurement Results Screen

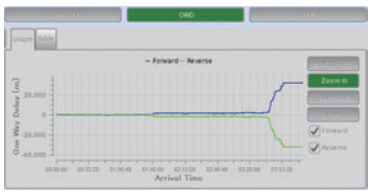


Test Execution Screen Throughput Report

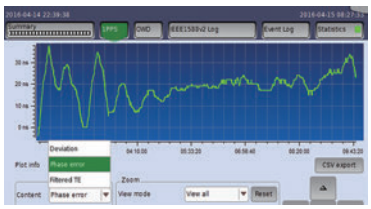
High Performance GNSS Disciplined Oscillator MU100090B: Commissioning and Verifying Mobile Backhaul

The MU100090B is an atomic-clock oscillator module providing reference timing to test network synchronization. It supports GPS, GLONASS, Galileo, Beidou, and QZSS as a reference timing source.

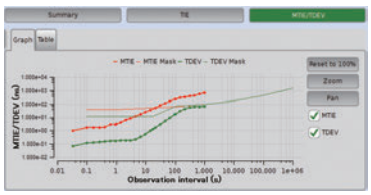
- Evaluation of PTP/SyncE synchronized network
  - At the network edge, the MU100090B emulates a slave clock to monitor timing distributed to the network.- max|TE| (absolute Time Error), cTE (Constant Time Error), dTE (Dynamic Time Error), wander (MTIE, TDEV) and pktSelectedTE as metrics of phase/time synchronization.
  - One-way delay (OWD) is measured to evaluate PDV and FPP.
  - SyncE Wander by TIE, MTIE, TDEV metrics
- Protocol Functional Test
  - After a PTP session is established, the tester displays various status conditions announced from the network and measures message rates.
  - Supported Profiles: G.8265.1, G.8275.1, G.8275.2, SMPTE2059-2 and customized parameters.
- One-way delay measurement using two MT1000A units
  - Synchronizes multiple MT1000A units in combination with MU100010A or MU100011A for one-way high-accuracy latency measurements between separate localities



One Way Delay Result



1PPS Phase Error and Deviation

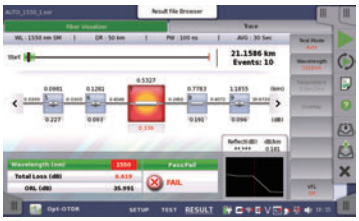


SyncE Wander

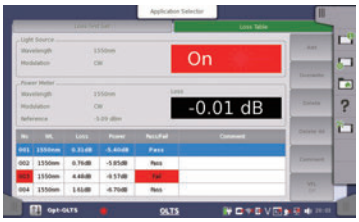
OTDR Module MU100020A/MU100021A/MU100022A/MU100023A: At-a-glance Confirmation of Cable Status

The MU100020A/MU100021A/MU100022A/MU100023A offers strengthened support for troubleshooting mobile optical cable faults, such as detection and display of damaged and dirty connectors at optical connections, as well as excessive optical return losses and line faults. In addition, the easy-to-use Fiber Visualizer function supporting easy report creation greatly improving work efficiency.

- All-in-One Built-in OTDR, Light Source, Optical Power Meter (Standard), and Visible Light Source (Option) Functions
  - Fiber Visualizer display graphical summary of fiber status and Pass/Fail evaluation results
  - The touch screen supports OTDR simple test mode operation and one-button output of PDF reports.
    - Actual trace event displayed with ability to quickly switch between the Trace view and Visualizer view
- I&M of Long-Distance Core and Metro Networks
  - Measures optical fibers exceeding 100 km and PON networks with 1 × 128 splitters max.
  - Three (Standard, Enhanced and High-Performance) models support SM fiber (1310 nm/1550 nm)
  - High dynamic range 3 wavelength SM 1310 nm 1550 nm 1625 nm model
- Mobile Network I&M
  - Measures mobile fronthaul and backhaul optical loss and return loss with hybrid models supporting both
  - SM (1310 nm/1550 nm) and MM (850 nm/1300 nm) fibers

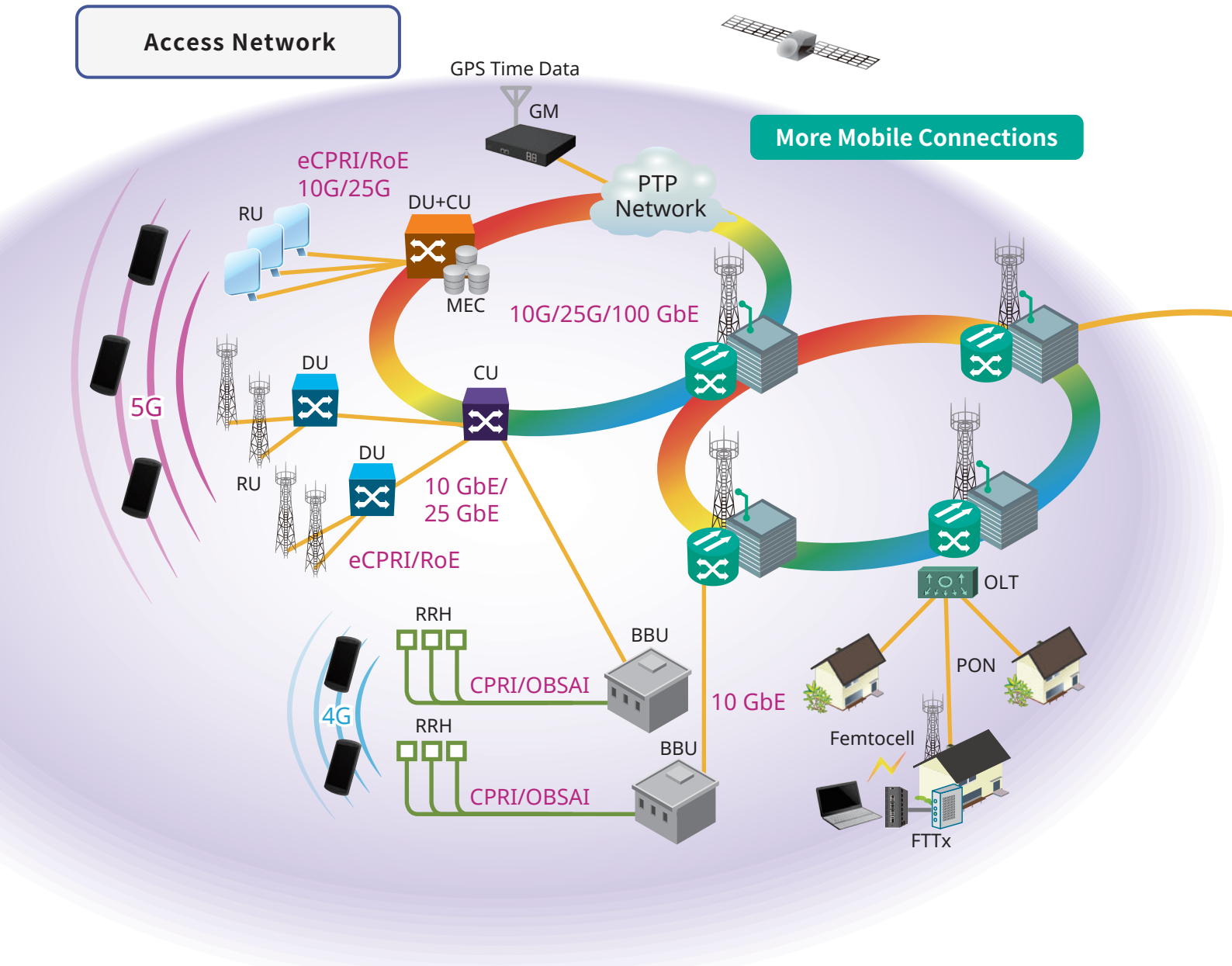


Fiber Visualizer



OLTS

Data Networks Supporting Modern Social Infrastructure



Access Network Trends

Mobile Fronthaul

- Area expansion using small cells
- Expansion of eCPRI/RoE with spread of LTE/5G services

Mobile Backhaul

- Speed increases from 1G to 10G/25G
- SyncE and PTP rollout
- Network configuration using WDM

FTTx

- Traffic increases due to more connected devices

Metro and Core Network Trends

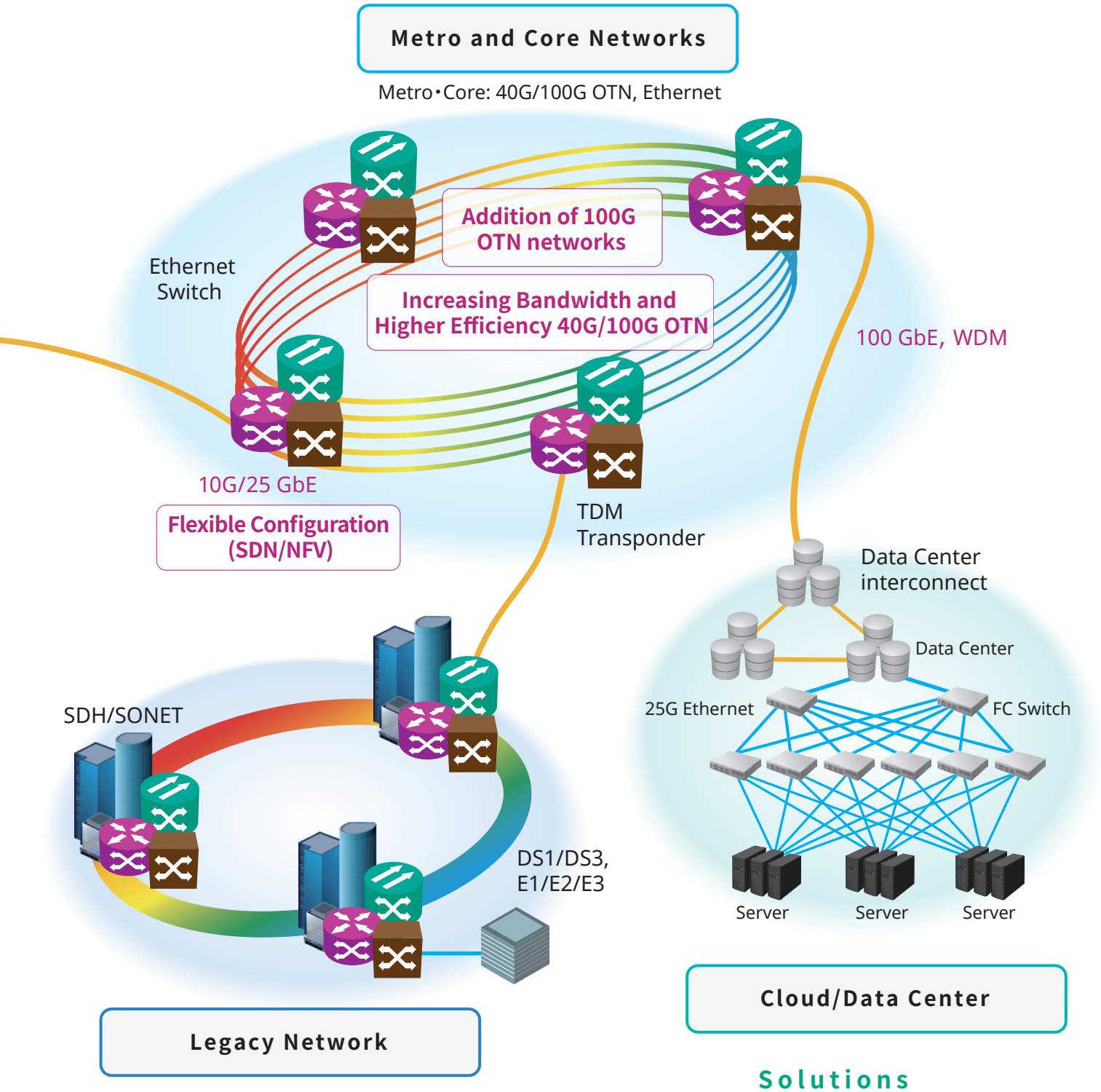
Expansion of carrier Ethernet

- Expansion of line quality guarantee services such as VLAN, Q-in-Q, etc.

Capacity and Speed

- Addition of 100G/400G Ethernet
- Expansion of OTN and WDM networks

Future Issues



Issues

- Difficult fault troubleshooting on shared optical cable
- Difficult network commissioning inspect due to network complexity
- Densely crowded optical and electrical interfaces
- Multiple measuring instruments required for network commissioning
- Changing test procedures and longer training times as evaluation targets increase

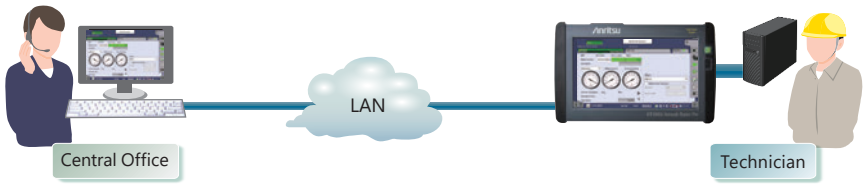
Solutions

Improved I&M using MT1000A

- All-in-one multi platform Optical Cable, CPRI RF spectrum and Data Transport I&M measuring instrument
- Same basic measurement procedure despite increasing test procedures
- Instant results sharing using remote function
- More one-touch operations for smooth on-site operation

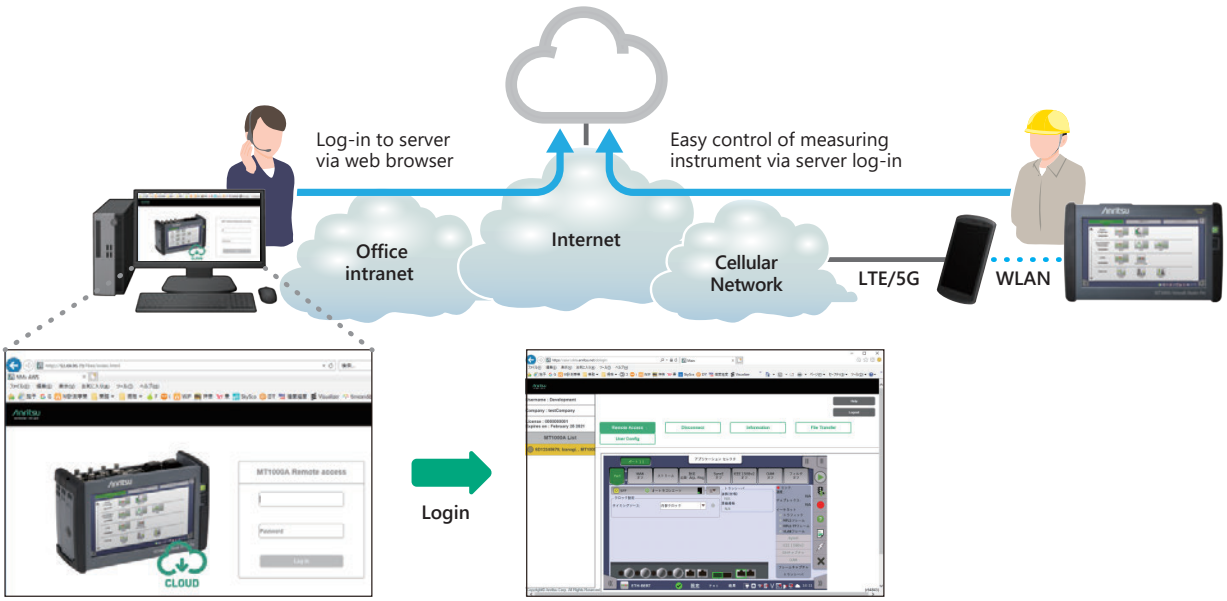
Remotely Controlled Network Installation, Start-up, and Maintenance

The MT1000A has a useful remote function for network installation, start-up and maintenance. Connecting the office and job site via LAN allows engineers in the office to see screens at the on-site instrument while making settings and measurements, and troubleshooting. This provides an efficient link between engineers and on-site measurements to help cut network installation and maintenance costs.



Easy Connections Anywhere Using SORA (Site Over Remote Access)*

Using the MX109020A Site Over Remote Access (SORA hereafter) software measuring instruments can be remotely controlled easily anywhere.
The SORA cloud-based service allows office users to log-in to an Internet webpage to control the measuring instrument from the office via a smartphone.

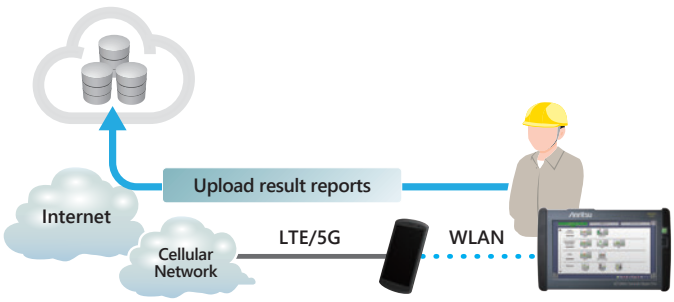


Login screen

Remote control screen

Uploads Measurement Reports to Cloud Storage

Can upload measurement-result reports to cloud storage via SORA
Linking with the SEEK tool for automatic scenario creation facilitates automation of related processes such as settings, measurement start, pass/fail evaluation, measurement results reporting, etc. The connection between the tester and storage uses secure SSH or HTTPS.



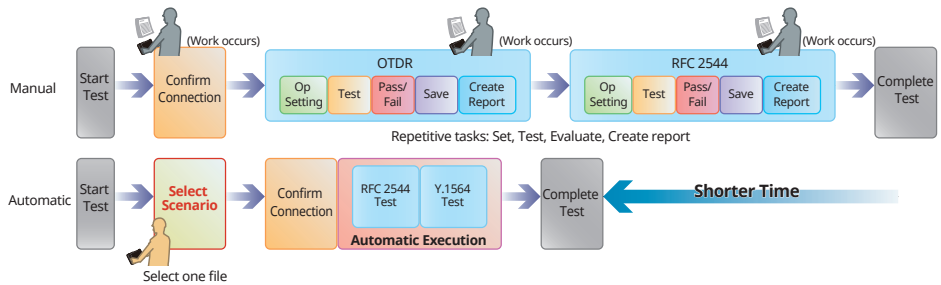
* This service can be used in countries and regions where the MT1000A WLAN/Bluetooth option has been approved. For details, contact Anritsu.

* To connect using SORA, you must purchase an option license for the main unit as well as a subscription license.
Refer to the MX109020A leaflet and product introduction for more details. You must agree to the service contract before purchasing SORA.
Refer to the service contract at the following URL: https://www.anritsu.com/en-AU/test-measurement/support/downloads/manuals/dwl20059.

Automated Field Test Environment

Easy to use | I&M

The MT1000A has automatic test functions for simple and efficient network commissioning. These MT1000A automated test functions run scenario files created in advance on a PC to perform tests automatically using preset measurement items, procedures, and pass/fail evaluation conditions. Since the scenario also handles report creation, evaluation and results, inexperienced workers can run accurate tests without operation mistakes and re-tests.



Automation Test Select

SEEK (Scenario Edit Environment Kit)
MX100003A

Video Inspection Probe

Easy to use | I&M

Scratches, chips and contamination on optical fiber connector end faces reduce transmission quality and increase errors. This leads to additional I&M work and cost. When the external optical fiberscope (G0382A USB Autofocus type, G0306C USB Standard type: sold separately) is connected, scratches and dirt on the optical connector end face can be confirmed visually. The connector image and detailed PASS/FAIL status is displayed as defined by IEC 61300-3-35 ensuring quality and consistency from connector to connector, technician to technician.

MT1000A screen displays details of the fiber tip core, cladding, adhesive and contact, with automatic Pass/Fail result judgement.

Features

	G0382A	G0306C
	USB Autofocus type. Based on Auto Operation.	USB Standard type. Based on Manual Operation.
Automatic focus adjustment	✓	NA
Automatic fiber image centering	✓	NA
Automatic image capture	✓	✓
Pass/Fail analysis on Screen	✓	✓
Pass/Fail LED indicator	✓	NA

G0382A

G0306C

Network Master Pro MT1000A Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Mainframe

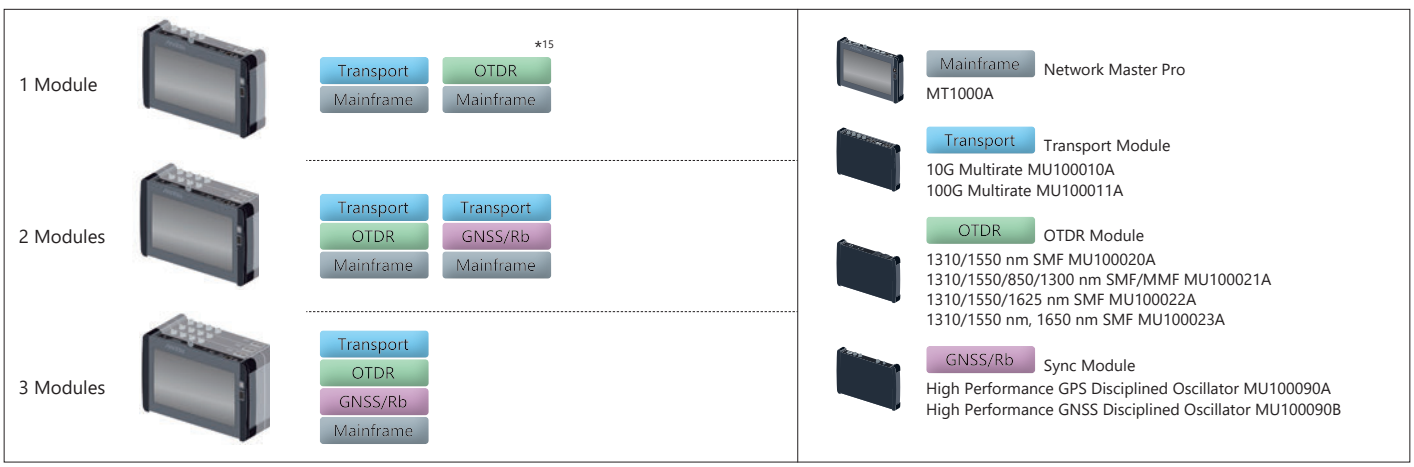
Model/Order No.	Name	
MT1000A	Network Master Pro	
Standard Accessories		
MT1000A-006*1	High Power Supply:	Installed
	Line Cord*2:	1 pc
B0745A	Softcase:	1 pc
B0728A*3	Rear Panel kit:	1 pc
G0385A*4	High Power AC Adaptor:	1 pc
G0310A	Li-ion Battery:	1 pc
Z1746A	Stylus:	1 pc
Z1747A*5	Carrying Strap:	1 pc
Z1748A*6	Handle:	1 pc
Z1817A*7	Utilities ROM:	1 pc
Options		
MT1000A-003*8	Connectivity for WLAN/Bluetooth	
MT1000A-005*9	AUX I/O	

Model/Order No.	Name
Optional Accessories	
B0691B*10	Hard Case
B0720A	Rear Panel
B0729A*11	Screw 1U
B0730A*11	Screw 2U
B0731A*11	Screw 3U
B0732A*12	Screw Kit
G0382A*13	Autofocus Video Inspection Probe
G0306C*13	Video Inspection Probe
G0309A*4	AC Adapter
G0324A	Battery Charger
G0325A	GPS Receiver

Maintenance Service

Model/Order No.	Name
MT1000A-ES210	2 Years Extended Warranty Service
MT1000A-ES310	3 Years Extended Warranty Service
MT1000A-ES510	5 Years Extended Warranty Service

Module Configuration*14



*1: The presence of the MT1000A-006 option can be recognized at the top right of the front panel. To retrofit to the already shipped item, please contact us.

Without MT1000A-006 With in MT1000A-006

*2: One line cord is attached to the area to shipment.
*3: Composed of B0720A, B0729A, B0730A and B0731A.
Refer to Module Composition for the module combination.
*4: The MT1000A with MT1000A-006 can be used. Use the AC adapter when using the MT1000A without MT1000A-006 installed.
*5: Shoulder strap for MT1000A.
*6: Hand strap for MT1000A.
*7: This DVD includes PDF files and formatting tools of each product's instruction manual (such as W3933AE, W3810AE, W3736AE, W3946AE).
*8: WLAN is available for certified countries and regions including USA, Canada, Japan and EU countries. Please visit the Anritsu web site for updated information. The Bluetooth® mark and logs are owned by Bluetooth SIG, Inc. and are used by Anritsu under license.
*9: MT1000A-005 is required for MU100090B. To retrofit to the already shipped item, please contact us.
*10: Can use module 1 to 2 in combination
*11: Includes 4 bolts of same length
*12: Includes B0729A, B0730A and B0731A
*13: This fiberscope uses the VIP function in the MT1000A Utility menu. Different tip types are used by the G0382A and G0306C.
*14: Any modular combination as shown in a figure.
*15: Required if the transport module is not used rear cover.

Transport Module MU100010A/MU100011A

10G Multirate Module MU100010A

Model/Order No.	Name
MU100010A	10G Multirate Module
Standard Accessories	
W3935AE	MT1000A Transport Module Quick Reference Guide: 1 pc
B0692A*1	ESD Box (for optical modules): 1 pc
Operation Manuals (Options)	
W3933AE	MT1000A Transport Module Operation Manual
W3736AE	MT1000A/MT1100A Remote Scripting Operation Manual
Z1821A*2	Utilities in USB Stick

*1: Up to four SFP+/SFPs can be stored.
*2: Include MT1000A Operation Manual and the Remote Script Manual.

Options*3

Model/Order No.	Name
Low Rate	
MU100010A-001*4	Up to 2.7G Dual Channel
Ethernet	
MU100010A-011	Ethernet 10G Single Channel
MU100010A-012	Ethernet 10G Dual Channel
MU100010A-020*5	TCP Throughput
OTN	
MU100010A-051	OTN 10G Single Channel
MU100010A-052	OTN 10G Dual Channel
MU100010A-061*6	ODU Multiplexing
MU100010A-062*6	ODU Flex
CPRI/OBSAI	
MU100010A-071	CPRI/OBSAI Up to 5G Dual Channel
MU100010A-072	CPRI/OBSAI 6G to 10G Single Channel
MU100010A-073	CPRI/OBSAI 6G to 10G Dual Channel
Fibre Channel	
MU100010A-002	FC 1G 2G 4G Dual Channel
MU100010A-091	FC 8G 10G Single Channel
MU100010A-092	FC 8G 10G Dual Channel
SDH/SONET	
MU100010A-081	STM-64 OC-192 Single Channel
MU100010A-082	STM-64 OC-192 Dual Channel

*3: This option can be retrofitted.
The Model/Order No. of retrofit option is "-3** ".
Example
As a retrofit, MU100010A-001 Up to 2.7G Dual Channel becomes MU100010A-301 Up to 2.7G Dual Channel Retrofit.
When retrofitting an option, please either specify one of the following media along with the relevant option, or Web download.

Model/Order No.	Name
Z1849A	DVD-ROM for Retrofit Options
Z1850A	USB Stick for Retrofit Options

*4: Includes OTN (OTU1), Ethernet (10 Mbps, 100 Mbps, 1 Gbps), SDH up to STM-16, SONET up to OC-48, PDH (E1, E3, E4), and DSn (DS1, DS3)
*5: Requires that at least one of the following options is installed: MU100010A-001, MU100010A-011, MU100010A-012
*6: Requires that at least one of the following options is installed: MU100010A-001, MU100010A-051, MU100010A-052

Maintenance Service

Model/Order No.	Name
MU100010A-ES210	2 Years Extended Warranty Service
MU100010A-ES310	3 Years Extended Warranty Service
MU100010A-ES510	5 Years Extended Warranty Service

100G Multirate Module MU100011A

Model/Order No.	Name
MU100011A*7	100G Multirate Module
Standard accessories	
W3935AE	MT1000A Transport Module Quick Reference Guide: 1 pc
B0763A*8	ESD Box (for Optical modules): 1 pc
Operation Manuals (Options)	
W3933AE	MT1000A Transport Module Operation Manual
W3736AE	MT1000A/MT1100A Remote Scripting Operation Manual
Z1821A*2	Utilities in USB Stick

*7: MT1000A-006 is required for MU100011A.
*8: One CFP4 plus either up to two QSFP28s or up to four SFP/SFP+s can be stored.

Options*3

Model/Order No.	Name
Standard	
MU100011A-001*9	Up to 10G Single Channel
MU100011A-003*9	Up to 10G Dual Channel
Ethernet	
MU100011A-013*10	Ethernet 40G Single Channel
MU100011A-015*10	Ethernet 100G Single Channel
MU100011A-017*11	Ethernet 25G Single Channel
MU100011A-020*12	TCP Throughput
MU100011A-021*13	SyncE Wander
MU100011A-023*14	RS-FEC for 100GBASE-SR4
OTN	
MU100011A-053	OTN 40G Single Channel
MU100011A-055	OTN 100G Single Channel
MU100011A-062*15	ODU Flex
MU100011A-063*15	ODU Multiplexing/Multi Stage
Fibre Channel	
MU100011A-004	Up to 10G FC Single Channel
MU100011A-005	Up to 10G FC Dual Channel
MU100011A-091	FC 16G Single Channel
eCPRI/RoE/CPRI/OBSAI	
MU100011A-071	CPRI/OBSAI Up to 10G Single Channel
MU100011A-072	CPRI/OBSAI Up to 10G Dual Channel
MU100011A-073	CPRI 12/25G Single Channel
MU100011A-074	CPRI 12/25G Dual Channel
MU100011A-075*11	eCPRI/RoE 25G Dual Channel
SDH/SONET	
MU100011A-083*16	STM-256/OC-768 Client Signal

*9: Only one of these option can be installed.
Included OTN (OTU1, OTU1e, OTU1f, OTU2, OTU2e, OTU2f), Ethernet up to 10 Gbps, SDH up to STM-64 and SONET up to OC-192.
*10: FEC is always Off.
*11: FEC selectable On/Off.
*12: Requires that at least one of the following option is installed: MU100011A-001, MU100011A-003
*13: In addition to the MT1000A-005, at least one of the following options is required: MU100011A-001, MU100011A-003, MU100011A-017
*14: Requires to MU100011A-015
*15: Requires that at least one of the following option is installed: MU100011A-001, MU100011A-003, MU100011A-053, MU100011A-055
*16: MU100011A does not have a physical interface of the option.
The option is required for client signal mapped in the OTN.

Maintenance Service

Model/Order No.	Name
MU100011A-ES210	2 Years Extended Warranty Service
MU100011A-ES310	3 Years Extended Warranty Service
MU100011A-ES510	5 Years Extended Warranty Service

Network Master Pro MT1000A Ordering Information

Optional Accessories for Transport Module

Model/Order No.	Name
Optical Module	
G0332A	100M FX 1310 nm MM SFP
G0319A	Up to 2.7G 1310 nm 15 km SFP
G0320A	Up to 2.7G 1310 nm 40 km SFP
G0321A	Up to 2.7G 1550 nm 80 km SFP
G0328A	1G/2G/4G FC 850 nm SFP
G0322A	1G/2G/4G FC 1310 nm SFP
G0323A	1G/2G/4G FC 1550 nm SFP
G0315A	10G LR/LW 1310 nm SFP+
G0316A	10G ER/EW 1550 nm 40 km SFP+
G0318A	10G ZR/ZW 1550 nm 80 km SFP+
G0329A	10G LR 1310 nm SFP+
G0356A	8G FC/10G SR 850 nm SFP+
G0386A	16GFC SR 850 nm SFP+
G0387A	16GFC LR 1310 nm SFP+
G0388A	25G SR 850 nm SFP28
G0389A	25G LR 1310 nm SFP28
G0359A	40G SR4 850 nm QSFP+
G0334A	40G LR4 1310 nm QSFP+
G0366A	100G SR4 850 nm QSFP28
G0364A	100G LR4 1310 nm QSFP28
G0365A	100G LR4 Dual Rate 1310 nm QSFP28
G0369A	100G LR4 Dual Rate 1310 nm CFP4

Model/Order No.	Name
Cables	
J1571A	Optical Cable SM LC/PC to SC/PC 3 m
J1575A	Optical Cable SM LC/PC to FC/PC 3 m
J1579A	Optical Cable SM LC/PC to LC/PC 3 m
J1581A	Optical Cable MM LC/PC to LC/PC 3 m
J1583A	Optical Attenuator 10 dB LC/PC to LC/PC
J1584A	RJ45 Cable 3 m
J1710A*17	BNC Cable 0.2 m
J0127B*17	COAXIAL CORD, 2.0 M

*17: 50Ω impedance cable for MU100090B and main-frame external clock input connector

Optical Transceivers Interface List

MU110010A	MU110011A	Model/ Order No.	Name	Form Factor	100 Meg Ethernet	156 Meg STM-1	614 Meg CPRI	622 Meg STM-4	768 Meg OBSAI	1GFC	1.23 Gig CPRI	1.25 Gig Ethernet	1.54 Gig OBSAI	2GFC	2.46 Gig CPRI	2.488 Gig STM-16	2.67 Gig OTU1	3.07 Gig CPRI OBSAI	4GFC	4.92 Gig CPRI	6.14 Gig CPRI OBSAI	8GFC	9.83 Gig CPRI	9.95 Gig STM-64	10.1 Gig CPRI	10.3 Gig Ethernet	10GFC	10.7 Gig OTU2	11.05 Gig OTU1e	11.09 Gig OTU2e	11.27 Gig OTU1f	11.3 Gig OTU2f	16GFC	25G Ethernet	40G Ethernet	40G OTN	100G Ethernet	100G OTN
✓	✓	G0332A	100M FX 1310 nm MM SFP	SFP	1310 nm, MM, 2 km																																	
✓	✓	G0319A	Up to 2.7G 1310 nm 15 km SFP	SFP		1310 nm, SM, 15 km																																
✓	✓	G0320A	Up to 2.7G 1310 nm 40 km SFP	SFP		1310 nm, SM, 40 km																																
✓	✓	G0321A	Up to 2.7G 1550 nm 80 km SFP	SFP		1550 nm, SM, 80 km																																
✓	✓	G0328A	1G/2G/4G FC 850 nm SFP	SFP						850 nm, MM, 0.5 km																												
✓	✓	G0322A	1G/2G/4G FC 1310 nm SFP	SFP						1310 nm, SM, 10 km																												
✓	✓	G0323A	1G/2G/4G FC 1550 nm SFP	SFP						1550 nm, SM, 40 km																												
✓	✓	G0315A	10G LR/LW 1310 nm SFP+	SFP+																		1310 nm, SM, 10 km																
✓	✓	G0316A	10G ER/EW 1550 nm 40 km SFP+	SFP+																		1550 nm, SM, 40 km																
✓	✓	G0318A	10G ZR/ZW 1550 nm 80 km SFP+	SFP+																		1550 nm, SM, 80 km																
✓	✓	G0329A	10G LR 1310 nm SFP+	SFP+								1310 nm, SM, 10 km																										
✓	✓	G0356A	8G FC/10G SR 850 nm SFP+	SFP+																		850 nm, MM, 0.3 km																
	✓	G0386A	16GFC SR 850 nm SFP+	SFP+																												850 nm, MM, 0.5 km						
	✓	G0387A	16GFC LR 1310 nm SFP+	SFP+																												1310 nm, SM, 10 km						
	✓	G0388A	25G SR 850 nm SFP28	SFP28																													850 nm, MM, 0.5 km					
	✓	G0389A	25G LR 1310 nm SFP28	SFP28																													1310 nm, SM, 10 km					
	✓	G0359A	40G SR4 850 nm QSFP+	QSFP+																														850 nm, MM, 0.1 km				
	✓	G0334A	40G LR4 1310 nm QSFP+	QSFP+																														1310 nm, SM, 10 km				
	✓	G0366A	100G SR4 850 nm QSFP28	QSFP28																																850 nm, MM, 0.1 km		
	✓	G0364A	100G LR4 1310 nm QSFP28	QSFP28																																1310 nm, SM, 10 km		
	✓	G0365A	100G LR4 Dual Rate 1310 nm QSFP28	QSFP28																																1310 nm, SM, 10 km		
	✓	G0369A	100G LR4 Dual Rate 1310 nm CFP4	CFP4																																1310 nm, SM, 10 km		

Sync Module MU100090B/MU100090A

High Performance GNSS Disciplined Oscillator MU100090B

Model/Order No.	Name
MU100090B*1	High Performance GNSS Disciplined Oscillator
Standard Accessories	
J1705A	AUX Conversion Adaptor
J1886A*2	GNSS Antenna
J1710A	BNC Cable (20 cm) × 2
Z2122A	Tripod for GNSS Antenna
MU100090B Option	
MU100090B-001	High Stability/Multi-Band
MU100090B-002	Multi-GNSS
Antenna Extension Cable	
J1904A	Antenna Extension Cable 25 m Kit
J1905A	Antenna Extension Cable 50 m Kit
J1906A	Antenna Extension Cable 75 m Kit
J1901A	Antenna Extension Cable 25 m (TNC-P, N-J)
J1902A	Antenna Extension Cable 25 m (N-P, N-J)
J1903A	Antenna Extension Patch Cable 0.4 m (N-P, SMA-P)

*1: Excellent Eco Product non-compliant.
*2: With 5 m cable, IP67 Ingress protection.
MT1000A-005 and Ethernet options are required for MU100090B.

Maintenance Service

Model/Order No.	Name
MU100090B-ES210	2 Years Extended Warranty Service
MU100090B-ES310	3 Years Extended Warranty Service
MU100090B-ES510	5 Years Extended Warranty Service

High Performance GPS Disciplined Oscillator MU100090A

Model/Order No.	Name
MU100090A*3, *4	High Performance GPS Disciplined Oscillator
Standard Accessories	
J1705A	AUX Conversion Adaptor
J1706A*3	GPS Antenna
J1710A	BNC Cable (20 cm) × 2

*3: Cannot be shipped to EU/EFTA countries and UK because of not being RoHS 10 compliant.
*4: Excellent Eco Product non-compliant.
MT1000A-005 and Ethernet options are required for MU100090A.

Maintenance Service

Model/Order No.	Name
MU100090A-ES210	2 Years Extended Warranty Service
MU100090A-ES310	3 Years Extended Warranty Service
MU100090A-ES510	5 Years Extended Warranty Service

OTDR Module MU100020A/MU100021A/MU100022A/MU100023A

Select a module polish type and connector adapter according to the procedures in items 1) to 6).

1) Select Base Module

Model/Order No.	Name
MU100020A	OTDR Module 1310/1550 nm SMF
Standard Accessories	
J1693A	Universal Connector 2.5 mm for OPM
J1694A	Universal Connector 1.25 mm for OPM
W3811AE	Quick Reference Guide

Model/Order No.	Name
MU100021A	OTDR Module 1310/1550/850/1300 nm SMF/MMF
Standard Accessories	
J1693A	Universal Connector 2.5 mm for OPM
J1694A	Universal Connector 1.25 mm for OPM
W3811AE	Quick Reference Guide

Model/Order No.	Name
MU100022A	OTDR Module 1310/1550/1625 nm SMF
Standard Accessories	
J1693A	Universal Connector 2.5 mm for OPM
J1694A	Universal Connector 1.25 mm for OPM
W3811AE	Quick Reference Guide

Model/Order No.	Name
MU100023A	OTDR Module 1310/1550/1650 nm SMF
Standard Accessories	
J1693A	Universal Connector 2.5 mm for OPM
J1694A	Universal Connector 1.25 mm for OPM
W3811AE	Quick Reference Guide

2) Select Dynamic Range Type*1

Select one of the following models.

Model/Order No.	Name	Supported Modules
MU100020A-020	Standard Dynamic Range (1310/1550 nm: 39/37.5 dB)	MU100020A
MU100020A-021	Enhanced Dynamic Range (1310/1550 nm: 42/41 dB)	
MU100020A-022	High-Performance Dynamic Range (1310/1550 nm: 46/46 dB)	
MU100021A-021	Enhanced Dynamic Range (1310/1550/850/1300 nm: 42/41/29/28 dB)	MU100021A
MU100022A-022	High-Performance Dynamic Range (1310/1550/1625 nm: 46/46/44 dB)	MU100022A
MU100023A-021	Enhanced Dynamic Range (1310/1550 nm, 1650 nm: 42/41 dB, 35 dB)	MU100023A

*1: Factory installed option only and cannot be retrofitted.

3) Select Connector Types

Select a module polish type and connector adapter according to the procedures in items 3-1) and 3-2).

3-1) Polish Types

Specify one connector polish type.

Model/Order No.*2	Name
MU100020A-010	UPC Polish
MU100020A-011*3	APC Polish
MU100021A-010	UPC Polish
MU100021A-011*3	APC Polish
MU100022A-010	UPC Polish
MU100022A-011*3	APC Polish
MU100023A-010	UPC Polish
MU100023A-011*3	APC Polish

*2: Factory installed option only and cannot be retrofitted.
*3: Used by SM port. An APC connector cannot be specified for the MM port, which uses a UPC connector.

3-2) Select Connector Adapter type

Specify one type of connector adapter.

Model/Order No.	Name
	For UPC Polish with Option 010
MU100020A-037*4	FC Connector
MU100020A-040*4	SC Connector
MU100021A-037*5	FC Connector
MU100021A-040*5	SC Connector
MU100022A-037*4	FC Connector
MU100022A-040*4	SC Connector
MU100023A-037*8	FC Connector
MU100023A-040*8	SC Connector
	For APC Polish with Option 011
MU100020A-025*4	FC Connector key width 2.0 mm
MU100020A-026*4	SC Connector
MU100021A-025*6	FC Connector key width 2.0 mm
MU100021A-026*7	SC Connector
MU100022A-025*4	FC Connector key width 2.0 mm
MU100022A-026*4	SC Connector
MU100023A-025*8	FC Connector key width 2.0 mm
MU100023A-026*8	SC Connector

*4: One specified connector adapter supplied free of charge.
*5: One each of same connector adapter for SM port and MM port supplied free of charge. Cannot specify different connector adapters for each port.
*6: One connector adapter for SM port supplied free of charge.
One connector adapter equivalent to Option 37 (FC/UPC) for MM port supplied free of charge.
*7: One specified connector adapter for SM port supplied free of charge.
One connector adapter equivalent to Option 40 (SC/UPC) for MM port supplied free of charge.
*8: One each of same connector adapter for SM port (1310/1550 nm) and SM port (1650 nm) port supplied free of charge.
Cannot specify different connector adapters for each port.

4) VFL

Model/Order No.*9	Name
MU100020A-002*10	Visual Fault Locator
MU100021A-002*10	Visual Fault Locator
MU100022A-002*10	Visual Fault Locator
MU100023A-002*10	Visual Fault Locator

*9: Factory installed option only and cannot be retrofitted.
*10: Installs dedicated port for visible light source; 2.5 mm universal light receiver type (connector adapter not required). J1335A required to connect 1.25 mm fiber.

5) Replacement Adapters

Model/Order No.	MU100020A MU100022A MU100023A*11	MU100021A	
For UPC Polish			
	SM port	SM port	MM port
J0617B (FC/UPC)	✓	✓	✓
J0619B (SC/UPC)	✓	✓	✓
For APC Polish			
	SM port	SM port	MM port
J0739A (FC/APC)	✓	✓	N/A
J1697A (SC/APC)	✓	✓	N/A

*11: There are two SM ports — one for 1310/1550 nm, and another for 1650 nm.

6) Maintenance Service

Model/Order No.	Name	Supported Modules
MU100020A-ES210	2 Years Extended Warranty Service	MU100020A
MU100020A-ES310	3 Years Extended Warranty Service	
MU100020A-ES510	5 Years Extended Warranty Service	
MU100021A-ES210	2 Years Extended Warranty Service	MU100021A
MU100021A-ES310	3 Years Extended Warranty Service	
MU100021A-ES510	5 Years Extended Warranty Service	
MU100022A-ES210	2 Years Extended Warranty Service	MU100022A
MU100022A-ES310	3 Years Extended Warranty Service	
MU100022A-ES510	5 Years Extended Warranty Service	
MU100023A-ES210	2 Years Extended Warranty Service	MU100023A
MU100023A-ES310	3 Years Extended Warranty Service	
MU100023A-ES510	5 Years Extended Warranty Service	

Optional Accessories for OTDR Modules

Model/Order No.	Name
W3810AE	MT1000A MU100020A Network Master Pro Operation Manual (Printed version)
J1335A	MU/LC Connector Adapter Converts ferrule connector diameter from 2.5 mm → 1.25 mm for visible light source (Option 002)
J1530A	SC Plug-in Converter (UPC(P)-APC(J)) (SC/UPC → SC/APC Adapter)
J1531A	SC Plug-in Converter (APC(P)-UPC(J)) (SC/APC → SC/UPC Adapter)
J1532A	FC Plug-in Converter (UPC(P)-APC(J)) (FC/UPC → FC/APC Adapter)
J1533A	FC Plug-in Converter (APC(P)-UPC(J)) (FC/APC → FC/UPC Adapter)
J1534A	LC-SC Plug-in Converter (for SM, SC(P)-LC(J)) (SC/UPC → LC/UPC Adapter for SM fiber)
J1535A	LC-SC Plug-in Converter (for MM, SC(P)-LC(J)) (SC/UPC → LC/UPC Adapter for MM fiber)
NETWORKS	Reporting Software (Microsoft Windows 7, Windows 10)

Remote Software Service

The following licenses must be purchased to use the MX109020A Site Over Remote Access.

Mainframe Option License

Model/Order No.	Name
MT1000A-003*1	WLAN/Bluetooth Connect
MT1000A-011*2	Site Over Remote Access Connect

*1: WLAN is available for certified countries and regions including USA, Canada, Japan and EU countries. Please visit the Anritsu web site for updated information. Although this product has not been approved by Bluetooth SIG, the supported frequencies are in the range assigned to Bluetooth® communications.
*2: Validity period is unlimited. An open TCP port may be required to allow the MT1000A to be connected from an in-company LAN to MX109020A, depending on the LAN security policy.

Subscription Option License

Model/Order No.	Name
MX109020A*3, *5, *6, *7	Site Over Remote Access Basic License
MX109020A-TL001*3, *4	Site Over Remote Access 1 Year License
MX109020A-001*5	Site Over Remote Access 8 Units
MX109020A-002*5	Site Over Remote Access Unlimited Units
MX109020A-003*8	Centralized Data Management

*3: We recommend purchasing a 1-year license in addition to the basic license.
*4: When extending the usage period, we recommend purchasing in 1-year license periods
*5: Up to two measuring instruments can be remotely controlled simultaneously with the basic license.
This number can be increased to up to 8 units by purchasing the MX109020A-001 option, and up to 100 units by purchasing the MX109020A-002 option.
*6: You must agree to the service terms before purchasing SORA.
Refer to the service terms at the following URL: https://www.anritsu.com/en-AU/test-measurement/support/downloads/manuals/dwl20059
*7: This product cannot be used in some regions and countries; please read the service terms for more details.
*8: Users must provide their own storage at the upload destination.

Note

Anritsu Advancing beyond

Specifications are subject to change without notice.

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Printed in Japan 20/SEP/2022 ddcm/CDT Catalog No. MT1000A_GENERAL-E-A-1-(23.00)